

**A. DC-8 Mission Planning (Task 147-14-51-10)**

**B. Investigators and Institutions**

P. I. Dr. Owen B. Toon, Earth System Science Division, NASA Ames Research Center, Moffett Field, Ca.

**C. Objective:**

A number of tasks needed to be performed to operate the DC-8 aircraft in the Arctic Ozone Expedition during January and February of 1989. These included development of improved navigational computer programs and performing advanced planning for flight tracks. The missions required further work in the field to plan flight tracks and to establish a data archive. Further work is needed to see that data collected during the expedition are properly reduced.

**D. Progress and Results:**

The DC-8 aircraft was successfully operated during the deployment phase of the Arctic Ozone Expedition. Data were collected by the investigators revealing the presence of extensive systems of polar stratospheric clouds. The data also showed the evolution of the chlorine and nitrogen chemistry within the Arctic vortex. A navigational computer code was improved so that the DC-8 navigators could perform their function more efficiently. This code was placed upon a computer system that would be accessible to the DC-8 experimenters. A DC-8 archive was initiated for use of the investigators after the mission. Editorial work was done to help with the Journal of Geophysical Research special issue for the Antarctic mission. We are working to help interpret aerosol data taken from DIAL one of the aerosol lidars on board the DC-8. The DC-8 archive will be completed and distributed to the DC-8 investigators.

**E. Publications:**

The Planning and Execution of ER-2 and DC-8 Aircraft Flights Over Antarctica, August and September 1987. A.F. Tuck, R.T. Watson, E.P. Condon, J.J. Margitan, O. B. Toon, J. Geophys. Res. in press (1989).